What is claimed is:

1. A halftoning method of converting a multilevel input image into a binary image, comprising the steps of:

(a) converting the multilevel value of a given noteworthy pixel of the multilevel input image into a binary value while pixels of the multilevel input image are scanned successively;

(b) diffusing a possible error, which has occurred in binary value with respect to the noteworthy pixel, to unscanned pixels adjacent to the noteworthy pixel by one diffusion technique; and

(c) changing the technique of said diffusing to another in accordance with a predetermined manner as the scanning of the successive pixels of the multilevel input image progresses.

2. A halftoning method according to claim 1, further comprising discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, wherein

if the result of said discriminating in step (b) is positive, the error diffusion technique is changed from one to another in step (c).

3. A halftoning method according to claim 2,

further comprising detecting the direction in which the profile of the multilevel input image extends with respect to the noteworthy pixel, wherein

if the result of said discriminating is positive, in step (b),

values according to the occurred error are added to the values of the unscanned pixels along the detected direction of the profile as an exceptional process.

4. A halftoning method according to claim 1, wherein in step (c) the error diffusion technique is changed for every pixel of the multilevel input image.

5. A halftoning method according to claim 4, further comprising discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, and detecting the direction in which the profile of the multilevel input image extends with respect to the noteworthy pixel, wherein

if the result of said discriminating is positive, in step (b),

values according to the occurred error are added to the values of the unscanned pixels along the detected direction of the profile as an exceptional process.

6. A halftoning method according to claim 2,

wherein said profile discriminating is carried out by calculating a profile value of the noteworthy pixel based on both the multilevel value of the noteworthy pixel and those of the adjacent pixels, and comparing the calculated profile value with a predetermined value.

7. A halftoning method according to claim 3, wherein said profile discriminating is carried out by calculating a profile value of the noteworthy pixel based on both the multilevel value of the noteworthy pixel and those of the adjacent pixels, and comparing the calculated profile value with a predetermined value.

8. A halftoning method according to claim 4, wherein said profile discriminating is carried out by calculating a profile value of the noteworthy pixel based on both the multilevel value of the noteworthy pixel and those of the adjacent pixels, and comparing the calculated profile value with a predetermined value.

9. A halftoning method according to claim 5, wherein said profile discriminating is carried out by calculating a profile value of the noteworthy pixel based on both the multilevel value of the noteworthy

pixel and those of the adjacent pixels, and comparing the calculated profile value with a predetermined value.

10. A halftoning method according to claim 6, wherein a two-dimensional digital filter dedicated to enhance the profile is used in said calculating of the profile value.

11. A halftoning method according to claim 7, wherein a two-dimensional digital filter dedicated to enhancing the profile is used in said calculating of the profile value.

12. A halftoning method according to claim 8, wherein a two-dimensional digital filter dedicated to enhancing the profile is used in said calculating of the profile value.

13. A halftoning method according to claim 9, wherein a two-dimensional digital filter dedicated to enhancing the profile is used in said calculating of the profile value.

14. A halftoning method according to claim 10, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Laplacian filter.

15. A halftoning method according to claim 11, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Laplacian filter.

16. A halftoning method according to claim 12, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Laplacian filter.

17. A halftoning method according to claim 13, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Laplacian filter.

18. A halftoning method according to claim 10, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Prewitt filter.

19. A halftoning method according to claim 11, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Prewitt filter.

20. A halftoning method according to claim 12, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Prewitt filter.

21. A halftoning method according to claim 13, wherein said two-dimensional digital filter dedicated to enhancing the profile is a Prewitt filter.

22. A halftoning method according to claim 6, wherein the profile value is directly calculated by making addition and subtraction individually on the multilevel values of the noteworthy pixel and the adjacent pixels.

23. A halftoning method according to claim 7, wherein the profile value is directly calculated by making addition and subtraction individually on the multilevel values of the noteworthy pixel and the adjacent pixels.

24. A halftoning method according to claim 8, wherein the profile value is directly calculated by making addition and subtraction individually on the multilevel values of the noteworthy pixel and the adjacent pixels.

25. A halftoning method according to claim 9, wherein the profile value is directly calculated by making addition and subtraction individually on the multilevel values of the noteworthy pixel and the adjacent pixels.

26. A halftoning method according to claim 1, wherein in said changing step (c), the error diffusion technique is changed to another that is selected in

a predetermined order from a plurality of error diffusion techniques.

27. A halftoning method according to claim 1, wherein in said changing step (c), the error diffusion technique is changed to another that is selected at random from a plurality of error diffusion techniques.

28. A halftoning method according to claim 1, wherein

in said error diffusing step (b), the error diffusion technique is a technique of proportionally distributing the occurred error to the plural unscanned pixels adjacent to the noteworthy pixel in accordance with said predetermined weighting pattern, and

in said technique changing step (c), the error diffusion technique is changed by changing said predetermined weighting pattern to another.

29. A halftoning method according to claim 2, wherein if a plurality of multilevel input images to be halftoned have an approximate profile, said discriminating is carried out for only one of the plural multilevel input images, and the result of said discriminating is used in halftoning the remaining multilevel input images.

30. A halftoning method according to claim 3, wherein if a plurality of multilevel input images to be halftoned have an approximate profile, said discriminating is carried out for only one of the plural multilevel input images, and the result of said discriminating is used in halftoning the remaining multilevel input images.

31. A halftoning method according to claim 4, wherein if a plurality of multilevel input images to be halftoned have an approximate profile, said discriminating is carried out for only one of the plural multilevel input images, and the result of said discriminating is used in halftoning the remaining multilevel input images.

32. A halftoning method according to claim 5, wherein if a plurality of multilevel input images to be halftoned have an approximate profile, said discriminating is carried out for only one of the plural multilevel input images, and the result of said discriminating is used in halftoning the remaining multilevel input images.

33. A halftoning apparatus for converting a multilevel input image into a binary image, comprising:

a binarizing section for converting the

multilevel value of a given noteworthy pixel of the multilevel input image into a binary value while pixels of the multilevel input image are scanned successively;

an error diffusing section for diffusing a possible error, which has occurred in binary value with respect to the noteworthy pixel, to unscanned pixels adjacent to the noteworthy pixel by one diffusion technique; and

an error diffusion technique changing section for changing said one diffusion technique to another in accordance with a predetermined manner as the scanning of the successive pixels of the multilevel input image progresses.

34. A halftoning apparatus according to claim 33, further comprising a pixel-on-profile detection section for discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, wherein

if the result of the discrimination is positive, said error diffusion technique changing section changes the error diffusion technique from one to another.

35. A halftoning apparatus according to claim 34, further comprising a direction-of-profile detection section for detecting the direction in which

the profile of the multilevel input image extends with respect to the noteworthy pixel, wherein

if the result of said discriminating is positive, said error diffusion section performs an exceptional process of adding values according to the occurred error to the values of the unscanned pixels along the detected direction of the profile.

36. A halftoning apparatus according to claim 33, wherein said error diffusion technique changing section changes the error diffusion technique for every pixel of the multilevel input image.

37. A halftoning apparatus according to claim 36, further comprising a pixel-on-profile detection section for discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, and a direction-of-profile detection section for detecting the direction in which the profile of the multilevel input image extends, wherein

if the result of the discrimination is positive, said error diffusion section performs an exceptional process of adding values according to the occurred error to the values of the unscanned pixels along the detected direction of the profile.

38. A computer-readable recording medium in which a halftoning program for instructing a computer to execute a function of converting a multilevel input image into a binary image is recorded, wherein said halftoning program instructs the computer to function as the following:

a binarizing section for converting the multilevel value of a given noteworthy pixel of the multilevel input image into a binary value while pixels of the multilevel input image are scanned successively;

an error diffusing section for diffusing a possible error, which has occurred in binary value with respect to the noteworthy pixel, to unscanned pixels adjacent to the noteworthy pixel by one diffusion technique; and

an error diffusion technique changing section for changing said one diffusion technique of said diffusing to another in accordance with a predetermined manner as the scanning of the successive pixels of the multilevel input image progresses.

39. A computer-readable recording medium according to claim 38, wherein said halftoning program instructs the computer to function also as a pixel-on-profile detection section for discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the

multilevel input image, and if the result of the discrimination is positive, said halftoning program instructs the computer in such a manner that said error diffusion technique changing section changes the error diffusion technique from one to another.

40. A computer-readable recording medium according to claim 39, wherein said halftoning program instructs the computer to function also as a direction-of-profile detection section for detecting the direction in which the profile of the multilevel input image extends with respect to the noteworthy pixel, and if the result of said discriminating is positive, said halftoning program instructs the computer in such a manner that said error diffusion section performs an exceptional process of adding values according to the occurred error to the values of the unscanned pixels along the detected direction of the profile.

41. A computer-readable recording medium according to claim 38, wherein said halftoning program instructs the computer in such a manner that said error diffusion technique changing section changes the error diffusion technique for every pixel of the multilevel input image.

42. A computer-readable recording medium according to claim 41, wherein said halftoning program instructs the computer to function also as a pixel-on-profile detection section for discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, and a direction-of-profile detection section for detecting the direction in which the profile of the multilevel input image extends, and if the result of the discrimination is positive, said halftoning program instructs the computer in such a manner that said error diffusion section performs an exceptional process of adding values according to the occurred error to the values of the unscanned pixels along the detected direction of the profile.